Graph Theory Notes Chapter 1

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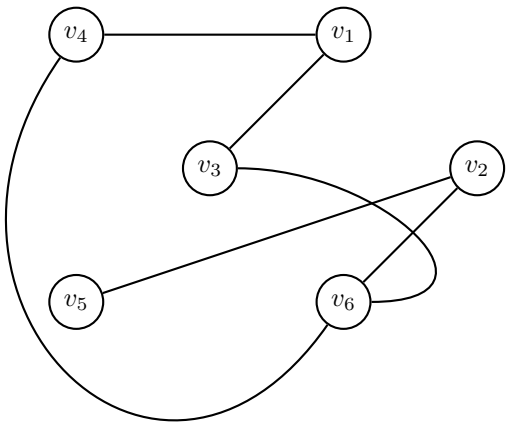
1 Graphs and Simple Graphs

A graph G is a ordered triple $(V(G), E(G), \psi_G)$. Basically, $V(G)$ is the set of vertices, $E(G)$ is the set of edges, and $\psi_G(e)$ returns an unordered pair of vertices given an edge.
Preferred Definition: A graph G has a set of vertices $E(G)$ and a set of unordered pairs of vertices called edges $V(G)$.

1.1 Definitions

Graphs that have a diagram whose edges intersect only at their ends are called **planar**. The graph below is **nonplanar** because edge (v_3, v_6) intersects with (v_6, v_2) and (v_2, v_5).



A vertex is **incident** with an edge if the vertex is an endpoint of the edge (e.g. v_1 is incident with edge (v_1, v_4)).